



MARSHALL STAR

Serving the Marshall Space Flight Center Community

May 25, 2006

Better, faster spacecraft designs

Marshall software offers promise of NASA-wide collaboration

By Sherrie Super

Even at NASA, host to some of the brightest engineering minds, the term "collaborative engineering" might not elicit excitement until you imagine its possibilities — better spacecraft designs within a shorter turnaround time.

Thanks to a recently launched NASA software system, more efficient space mission planning soon could be a reality. Developed by a team of Marshall Center engineers, the new system was created to support the NASA design teams charged with engineering the spacecraft of tomorrow — advanced vehicles to realize the Vision for Space Exploration. The Vision plans for the return to the moon, human missions to Mars and exploration of the rest of the solar system.



David Higginbotham/MSCC

See PARSEC on page 8

Marshall Center engineers use a new suite of design tools called PARSEC, short for Preliminary Analysis of Revolutionary Space Exploration Concepts.

NASA names Marshall Center's Charles Scales associate administrator for Institutions and Management

NASA Deputy Administrator Shana Dale announced Monday Charles H. Scales as the new associate administrator for the Office of Institutions and Management.

In his new position, Scales manages the operational and management support activities across the agency. He also ensures the agency work force, infrastructure, and facility capabilities are working together in support of NASA's long-range needs.

A NASA veteran of more than 33 years, Scales comes to Headquarters from the Marshall Center, where he's been the deputy director in the Office of Center Operations since 2005. Prior to that, he served as director of the Center Operations Directorate at NASA's Glenn Research Center in Cleveland.

Scales began his NASA career in 1973 as a cooperative education student in the Management Services Office at Marshall. He earned a bachelor's degree in general business from Alabama A&M University and joined the center's Institutional and Program Support Directorate as a communications specialist in 1975.

A 2005 inductee into the Alabama A&M University Alumni Hall of Fame, Scales has completed the Carnegie Mellon University senior



Charles Scales

See Scales on page 5

Marshall introduces process for developing budgets

There has been a lot of activity around developing and presenting the center's institutional and programmatic budgets. The old way of developing the center's budget, Program Operating Plan Process, has been replaced with a new process, Planning, Program, Budgeting and Execution. The transition is a good one.

This new process adopted by the agency has been successfully used by the Department of Defense, and one of its key features is tying dollars directly to strategic goals and priorities. It is driven by milestones, which are associated with outcomes, which in turn are linked to performance.



David King

For years, the budget process was based on incremental increases to continue programs and projects. But this did not create a level playing field because it did not separate institutional budget development from programmatic budget development. Cost differences among centers affected the cost of programs and projects. With Planning, Program, Budgeting and Execution, centers are equally favorable to programs and projects. The institutional budget is prepared by centers and agency mission support offices, while the programmatic budget is developed by the mission directorates and program offices. Separating these activities eliminates multiple changes and submissions that were common when programmatic budgets incorporated a center's cost structure.

While our workforce situation is highly dynamic, we have reduced the projected number of uncovered workforce by landing new work assignments. However, we still have the challenge of delivering on our many programmatic commitments, while at the same time, strengthening the institution to be more resilient and robust in an ever-changing environment. Examples of Marshall's ever-changing environment are cost increases in utilities, obligatory contract fee escalation and new requirements in the areas of information technology security, physical security and facility condition.

With all the moving parts, assumptions and needs within the budget, the task to develop Marshall's budget required many long hours. The Office of Strategic Analysis and Communications partnered with the Office of the Chief Financial Officer to produce a healthy and balanced plan. I am pleased with the job these two organizations performed in setting priorities with a clear focus on helping the programs and projects get the job done. With our center's proposal in hand, Robin Henderson, Marshall's associate director, briefed headquarters on our budget submission. We anticipate further direction from the agency, and we will respond by June 1.

While much remains to be finalized, we feel confident we are clear about what is vital to our center. The strategic approach the agency has taken makes good business sense; and, as we continue to move forward with the Planning, Program, Budgeting and Execution process, I believe the benefits of accountability as good stewards of taxpayer dollars will become more evident.

David A. King

Director, Marshall Space Flight Center

RS-68 engine tapped to power core stage of Cargo Launch Vehicle

By Sheri Bechtel

NASA has chosen the RS-68 engine to power the core stage of the agency's heavy-lift Cargo Launch Vehicle intended to carry large payloads to the moon.

The announcement supersedes NASA's initial decision to use a derivative of the space shuttle main engine as the core stage engine for the heavy-lift launch vehicle.

The Cargo Launch Vehicle will serve as NASA's primary vessel for safe, reliable delivery of resources to space. It will carry large-scale hardware and materials for establishing a permanent moon base, as well as food, fresh water and other staples needed to extend a human presence beyond Earth orbit.

Recent studies examining life-cycle cost showed the RS-68 is best suited for NASA's heavy-lift cargo requirements. The decision to change the core stage engine also required an increase in the size of the core propulsion stage tank, from a 27.5-foot diameter tank to a 33-foot diameter tank, to provide additional propellant required by the five RS-68 engines.

The RS-68 is the most powerful liquid oxygen/liquid hydrogen booster in existence, capable of producing 650,000 pounds of thrust at sea level. In contrast, the space shuttle main engine is capable of producing 420,000 pounds of thrust at sea level. The RS-68, upgraded to meet NASA's requirements, will cost roughly \$20 million per engine, a dramatic cost savings over the shuttle main engine.

See RS-68 on page 7

The face of mission success is:

Don Krupp, Marshall Center's chief of the Vehicle Analysis Branch

As chief of the Vehicle Analysis Branch in Marshall Center's Engineering Directorate, Don Krupp is helping NASA achieve its mission of scientific exploration. Krupp has a full slate of activities, including quality time spent with family.

What are the key responsibilities of your job?

In the Vehicle Analysis Branch of the Spacecraft and Vehicle Systems Department, I work alongside engineers by leading the analytical integration of all design analyses associated with NASA's launch vehicles and spacecraft. We analyze designs to make sure all components and systems of the vehicle "talk" to each other, ensuring the design works safely and properly. Our job is primarily about communication, making sure hardware designs and design analyses are consistent and integrated to provide the best possible solution to our Marshall project office partners.

In support of NASA's Constellation Program, the branch is learning how to perform a new role of analytical design integration with the Crew Launch Vehicle so we also can apply this knowledge to the upcoming Cargo Launch Vehicle and other elements as part of NASA's Vision for Space Exploration.

What is your education background?

I earned my bachelor's degree in electrical engineering from Tennessee Tech University in 1988. I received my master's and doctorate degrees in electrical engineering from The University of Alabama in Huntsville in 1993 and 2004, respectively.

How many years have you been at the Marshall Center?

I started working with NASA right out of college 17 years ago.

What services does your job provide in support of the center's mission?

I aim to accomplish Marshall's mission to develop the next

generation of launch vehicles by helping engineers design the vehicle to meet the system's requirements. Because my branch analyzes spacecraft and launch vehicle designs, we must ensure that all components and systems of the vehicle are completely integrated and the design works safely and properly.

What are you looking to accomplish in your role this year?

I plan to help the Crew Launch Vehicle successfully complete the system requirements review in September, which will lay a solid foundation for engineers to proceed with the design of this vehicle.

It is a stepping stone to get us closer to bringing the Crew Launch Vehicle to the launch pad. Over this year, I also hope to become a better manager, listen and communicate better and hopefully have some fun along the way.

What is the biggest challenge you may face?

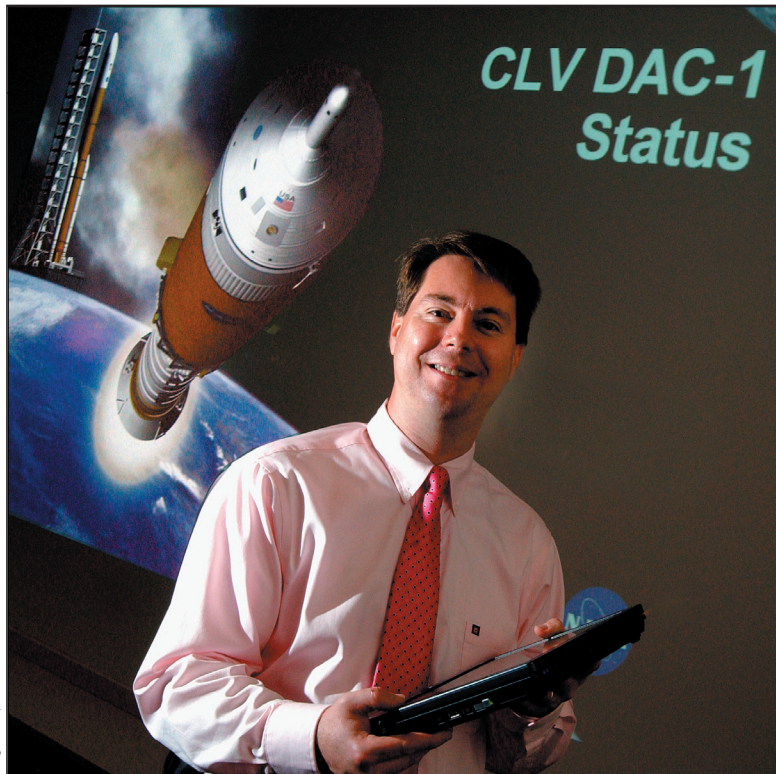
One of our challenges is implementing engineering excellence and technical authority within Marshall's Engineering Directorate while helping the center's Exploration Launch Projects Office formulate its plans related to the Crew Launch Vehicle. Initiating the design and development

of a new, human-rated launch vehicle is something that hasn't been done by the agency since the 1970s.

I have tremendous confidence in the personnel at the center and in my branch. Marshall has some top-notch folks. I am extremely lucky to be at Marshall at this point in time. We have the skills and capabilities to make this happen. We really have a bright future.

On the personal side, how do you like to spend your leisure time?

I love spending time with my wife and two daughters. I am very blessed. I have a wonderful family who keeps me grounded. Together, we enjoy camping, walking and playing on the swing set in our backyard.



Doug Stoffer/MSCC

Don Krupp

Emergency Operations Center team strives to keep Marshall employees safe

By Jessica Wallace

Whenever stormy weather approaches Madison County, it is not uncommon for Marshall team members to hear "May I have your attention, please? Lightning has developed within 10 miles of the Marshall Space Flight Center."

But Marshall team members may not realize the same group monitoring potentially hazardous weather conditions also strives to protect the center and its personnel from crises ranging from fires to bomb threats.

The Emergency Operations Center at Marshall is managed by the Office of Center Operations. The center's emergency plan addresses issues from pollution and bad weather to fires and explosions, personnel injury or accidents, workplace violence, bomb threats or suspicious packages and emergency evacuation scenarios. The emergency team, led by Pete Allen, emergency management director at Marshall, also is responsible for handling incidents involving hazardous or radiological materials or unexploded ordnance, and minimizing unauthorized assembly that could interfere with or disrupt center operations.

So those lightning alerts are just the tip of the iceberg, Allen said. "We're tasked with providing emergency-response capabilities consistent with all applicable state and federal laws, national-level directives and NASA agency requirements for effectively managing emergencies," he said.

"We have a memorandum of understanding with Redstone Arsenal Garrison, the U.S. Army Aviation and Missile Command, the Huntsville/Madison County Emergency Management Agency,

the cities of Huntsville and Madison, and the Madison County Commission," said Cathy Miller, Marshall's emergency preparedness officer. "Protective Services answers all E911 calls and can respond effectively to multiple emergencies. They coordinate with the Redstone Arsenal Fire & Emergency Services who are our first responders on most emergencies and their response time is five minutes or less. If Marshall needs an ambulance, the Huntsville Emergency Medical Services are on center during normal work hours. And if the surrounding community needs our help, we'll be more than happy to assist."

The memorandum of understanding became effective in 1989, after a series of deadly tornados hit Huntsville. If a similar emergency were to occur today, Miller said the goal of the operations team would be taking the necessary steps to return Marshall to normal operations. "We contact our experts, we get the emergency under control, we get the center back to normal," she said.

Allen believes the operations center's most important service is keeping the workforce safe. Miller leads emergency response teams in scheduled disaster exercises and helps prepare for routine tornado drills. Every February, the center participates in a statewide tornado drill to ensure that employees know the designated protective areas in their building. Miller conducts periodic "Lessons Learned" sessions for the Marshall team, providing safety topics and educational material to the entire workforce.

Miller also is responsible for coordinating emergency activities

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David Higginbotham/MSFC

Cathy Miller, emergency preparedness officer, makes a weather announcement to the Marshall workforce.

Safe

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with NASA's Michoud Assembly Facility in New Orleans — the manufacturing complex where contractors assemble the space shuttle external tanks. In addition, she serves as Marshall's point of contact for ensuring the compatibility and coordination of Marshall's emergency preparedness activities with NASA Headquarters, the Federal Emergency Management Agency, other federal agencies and state and local governments.

The Emergency Operations Center has strong support from Marshall senior management, Allen and Miller said. The attack of Sept. 11, 2001, and the impact of Hurricane Katrina in 2005 have been indicators of the importance of emergency management. "It's really heartening to see how people are willing to pitch in and help," Allen said. "Anytime we have an emergency, we have people from all over the community willing to come in and help."

When Hurricane Katrina was heading toward the Gulf Coast last year, Marshall's operations center was already in full

swing. "When the storm hit, we had Michoud on the phone. We witnessed the storm firsthand through their experience," Allen said.

"Katrina was the biggest natural disaster this country has ever seen," he added. "Were there things we could've done better? Sure, we had lessons learned. But NASA and the Marshall Center responded admirably to this disaster. Every NASA center pitched in and was willing to do anything necessary to support our Michoud operations, as well as the Stennis Space Center in Mississippi, which was also affected by the storm."

Be prepared

Preventive measures are a vital part of emergency response, Miller said.

One of the questions the annual Program Evaluation Project survey asks Marshall personnel is if emergency plans are re-evaluated at least annually. Miller said the answer is definitely "yes."

For more information about the survey, visit <http://pep.jsc.nasa.gov/index.asp>.

The writer is the Marshall Star editor.

Emergency Operations Center team working 'down under'

By Jessica Wallace

Equipped with radios, real-time Internet data systems and television monitors, the Emergency Operations Center, managed by the Office of Center Operations' Protective Services Office, operates from the basement of Building 4202. Standard hours of operation are from 8 a.m. to 4:30 p.m.

The operations center serves as a communications base station, complete with handheld radios, amateur radio transmitter, storm spotter radio channel and direct lines to the Redstone Arsenal Fire & Rescue Services, Redstone Garrison Installation Center, Huntsville/Madison County Emergency Management Agency and the National Weather Service Forecast Office in Huntsville. In the event the Marshall Center's telephone system loses power, the Marshall Emergency Operations Center has fail-safe telephones.

The operations center also monitors weather bulletins from the National Weather Service, along with the local TV stations, national networks and the Weather Channel. In addition, the center has 10 volunteers who are trained as storm spotters and are equipped with handheld radios, binoculars and pagers. They deploy to specific center locations during tornado watches and warnings.

The Marshall Center and its off-site Intergraph leased buildings and education training facility are equipped with Emergency Warning System speakers enabling Marshall personnel to be warned of any emergency. A monthly test is conducted to guarantee the system is operating properly.

The NASA Information Support Center, located in Building 4629, provides after-hours, weekend and holiday service for the Emergency Operations Center.

For questions about emergency management, call Cathy Miller at 544-3131.

The writer is the Marshall Star editor.

Scales

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executive seminar and the Federal Executive Institute's leadership for a democratic society course. He is a graduate of Leadership Huntsville and Leadership Alabama; both are nonprofit community and state organizations that nurture civic participation.

Scales has earned a number of awards, including a 1999 Space Flight Leadership Award recognizing outstanding leadership ability; the NASA Exceptional Service Medal, awarded for

significant sustained performance contributing to the agency's mission; and the Silver Snoopy Award, the highest award bestowed by astronauts for outstanding contributions to flight safety and mission success.

The Office of Institutions and Management has a diversified portfolio and manages the following agency offices: Diversity and Equal Opportunity, Small and Disadvantaged Business Utilization, Procurement, Human Capital Management, Infrastructure and Administration and the NASA Shared Services Center.

Summer education programs give students head start

Bring new partnerships, future employees to the Marshall Center

By Bill Hubscher

High school, college and post-graduate students have a chance to get a head start in the job market by stepping into NASA's labs and project offices.

The opportunity is part of the Marshall Academic Affairs Office's Higher Education Summer Programs.

This year, 116 students will spend a portion of their summer in Huntsville interacting and working with Marshall scientists and engineers. They were chosen from applicants to 16 programs offered through NASA's education Web site.

Program and project offices across the center will see the new faces as the students begin summer internships and co-op programs in coming weeks.

"By bringing students on board, we provide a service for NASA and the Marshall Center," said Julie Mills, senior program administrator for the Academic Affairs Office's Visiting Researcher Exchange and Outreach Program. "The students experience what it is like to work for NASA, and many end up coming back after graduation."

One such student is Patrick White. He is a junior at Auburn University and just started his second summer assigned to Marshall's Natural Environments Branch, helping with computer modeling and user manuals on the Terrestrial and Planetary Environments Team.

"This is such a great opportunity for me," White said. "I hope to get into meteorology or something to do with weather. Here at Marshall, I get the chance to work on computers and create atmospheric models of Earth and Mars. There aren't many other places I can study climates like that. It's very interesting."

The Marshall employees White is working with say he is a tremendous help.

"Besides performing tasks we need help finishing, he asks lots of questions," said

Barry Roberts, the lead of the Terrestrial and Planetary Environments Team.

"Sometimes, he will challenge us with a question we had not thought of, which allows us to improve our products before we take them to our customer," said Roberts. "He gives us a fresh approach to what we do. His dedication and enthusiasm are inspiring."

"I also think this experience benefits Patrick because he faces a different kind of pressure," Roberts added. "Facing final exams in school is tough, but not like the deadlines we face in the work environment."

Students are not the only ones who will be working alongside Marshall engineers and scientists. The summer programs also will partner professors from universities and the aerospace industry with Marshall employees.

"Marshall scientists and engineers are already recognized as leaders in the scientific and aerospace community," said Mike Freeman, university affairs officer in the Marshall Academic Affairs Office. "These partnerships with students ensure a future workforce, and the partnerships with academia and industry can only lead to advances in the future of spaceflight."

Some programs are tailored for the student working toward a master's degree. Others are strictly for undergraduates or offer college faculty fellowships. There also are minority summer internships, including "Women in Science & Engineering" and "Society of Hispanic Professional Engineers."

For the first time, NASA is offering agency-wide research opportunities for faculty and



Marshall scientist Jessica Gaskin, right, explains the work she performs on X-ray telescopes to the Graduate Student Research Program participants touring the X-ray development lab. She participated in the same graduate student program each summer from 2002-2004 before joining Marshall full time in June 2005. The lab is part of the Space Science Office at the National Space Science and Technology Center in Huntsville.

students from tribal colleges and universities. Working with the American Indian Higher Education Consortium, the project provides faculty and students an opportunity to spend eight to 10 weeks at a NASA center working on research projects. Eight centers will host more than 50 faculty and students from 12 tribal colleges. Marshall will host a team of faculty and students from Crownpoint Institute of Technology in Crownpoint, N.M., and a student from Fond du Lac Tribal and Community College in Cloquet, Minn.

The Higher Education Summer Programs offer Marshall employees extra hands and minds for the summer, and also gives those same employees intangible benefits. "As the students work closely with the scientists and engineers here at Marshall, the employees learn about mentoring and advising," Mills said. "They help guide the people who are the future of NASA."

Any Marshall office that has a project need and funding can join the Visiting Researcher Exchange and Outreach Program. For a list of the current programs and more information, contact Mills at the Academic Affairs Office at julie.mills@nasa.gov or call 961-7709 or visit <http://education.nasa.gov>.

The writer, an ASRI employee, supports the Office of Strategic Analysis and Communications.

RS-68

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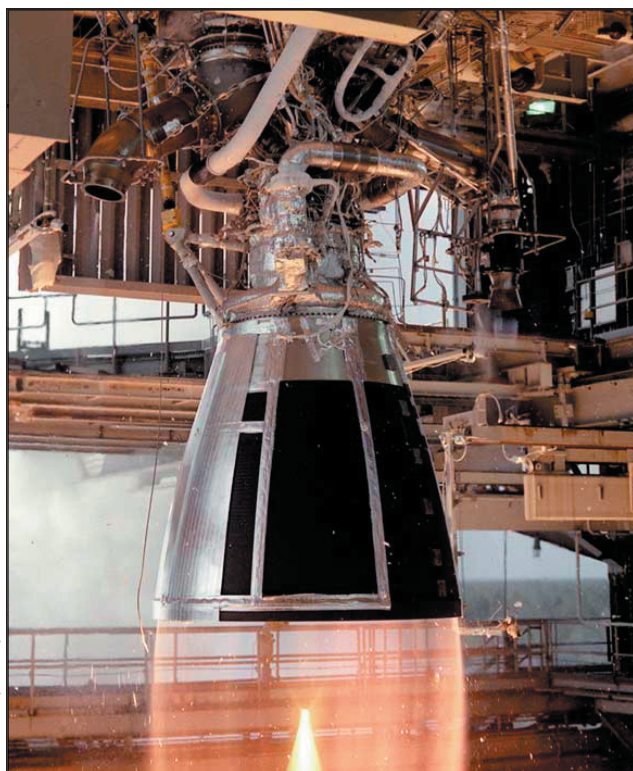
The prime contractor for the RS-68 engine is Pratt & Whitney Rocketdyne of Canoga Park, Calif. Pratt & Whitney Rocketdyne also manufactures the shuttle main engine.

The RS-68 is used in the Delta IV launcher, the largest of the Delta rocket family developed in the 1990s by the U.S. Air Force for its Evolved Expendable Launch Vehicle program and commercial launch applications.

The Cargo Launch Vehicle effort includes multiple project element teams at NASA centers and contract organizations around the nation, and is led by the Exploration Launch Projects Office at the Marshall Center.

The project office is part of the Constellation Program led by NASA's Johnson Space Center in Houston. Constellation is a key program of NASA's Exploration Systems Mission Directorate in Washington.

The writer, an ASRI employee, supports the Office of Strategic Analysis and Communications.



Pratt & Whitney Rocketdyne

An RS-68 engine undergoes hot-fire testing at NASA's Stennis Space Center, near Bay St. Louis, Miss., during the engine's developmental phase.

Classified Ads

To submit a classified ad to the Marshall Star, go to Inside Marshall, to "Employee Resources," and click on "Employee Ads — Submit Ad." Ads are limited to 15 words, including contact numbers. No sales pitches. Deadline for the next issue is 4:30 p.m. Thursday.

Miscellaneous

iPod Remote Interactive Doc DS-A1, for Onkyo stereo or home theater system, NIB, \$75. 256-828-1234
Trailer hitch w/2" receiver for full-size Chevy truck, \$50. 256-694-1217
Miniature Schnauzer puppies, 4 females, 4 males, 11 weeks old, full-blooded, no papers, \$200. 534-0829
Italian Greyhound puppies, available June 15, \$600. 880-7378
GE TV, 31"; shelf for 150 lb. TV; Sony Progressive Scan DVD player. 461-6337
Chair, \$20; loveseat, \$40; old dresser, \$40; antique Armoire, \$250; metal shelves, \$30 each. 233-4580
Chain link fence, approx. 250'; two 10' gates; fence up, you remove, make offer. 233-1487
Sanyo television, 19", \$30. 865-567-8862
Gamefisher fishing/hunting boat, 12', fiberglass, 9HP Evinrude motor, trailer, \$700. 256-694-1217
Frigidaire chest freezer, 14.8 cu. ft., white, lockable, \$200. 603-4891
Martin DM acoustic guitar, \$550. 882-1904
Innotek SD-2100 rechargeable in-ground pet fencing system and lightning protection system, used little, \$150. 325-0085
Car bike rack for 2" receiver mount, holds two bikes by front forks, \$100. 864-8183
Custom built smoker, 250-gallon tank on 14' trailer, 2 wooden storage boxes, \$3,500. 520-2327

Baby crib, natural wood w/gently used mattress, converts to head/footboard for full-size bed, \$250. 694-1121
Old upright Royal piano w/glass mirror, \$100. 536-1553
Jimmy Buffet lawn tickets for Atlanta concert, 6/2/06, 3 tickets available, \$110 each. 508-7795
Rocket, tin friction w/automatic vertical lift/opening door, in box, \$20. 303-3702
Trampoline, 14' diameter, \$100. 830-2806
Two side-by-side, eye-level crypts, Valhalla Memory Gardens, \$5,200, includes all fees. 860-558-3063
Kenmore canister carpet cleaner, \$55. 325-3696
Blaupunkt 6.5" coaxial car speakers, 40 watt, new in box, \$30. 683-9016
Stationary exercise bicycle, \$125. 851-0893
Chandelier for dining room, gold, double tier, \$100. 881-2131
Lumber, furniture grade, Pecky Cypress, 1"x8", 520 board feet, \$2.80/linear foot. 694-0172
Stihl trimmers, professional model; Homelite, \$75 for both. 256-776-6949
Canon Rebel 2000 Film camera w/28-80 lens, manual, new battery, \$100. 655-6293
Baldwin Spinnet piano, original owner, new hammers and pedal springs, \$850. 864-2990
Celestron NexStar telescope, 11 GPS, integrated GPS, electronic compass, hands-free alignment, programmable, filters, accessories, \$2,000. 256-508-0164

Vehicles

1999 C180 Mercedes, white w/beige interior, sunroof, all records, \$9,900. 468-3803
1998 Chevy S-10 extended cab, gray, 103K miles, V6/4.3L, 2WD, automatic, A/C, all power, \$5,000. 684-1509
2002 Nissan Pathfinder SE, 2WD, automatic, Bose 6-CD changer, luggage rack, running boards, 62K miles, \$15,500. 880-9025
1998 Chevrolet Cavalier, 4 cylinder, burgundy, cruise, keyless, a/c, all power, CD/radio, 153K miles, good tires, \$1,950. 256-603-3558
Yamaha PW80, 3-speed automatic, \$450. 527-8116
1995 Isuzu Trooper LS, 4x4, 3.2V/6 cyl., new tires, 12-CD changer, AM/FM cassette, new tires, \$4,250. 256-828-5439
1996 Oldsmobile Cutlass SL, 3.4L, V6, white, approx. 132K miles, \$2,950. 931-625-0671

2001 Honda XR100 motorcycle, new rear tire, well maintained, \$1,050. 216-8868
2005 GMC Yukon XL, black, fully loaded, DVD, 20" wheels, \$28,900. 206-0792
2001 Lincoln Continental, white, black top, 54K miles, charcoal leather, loaded, \$10,750. 256-759-0478
2000 Skeeter SL176 fish/ski boat, 150 Yamaha V-Max, 2 depth finders, new trolling motor, \$10,000. 256-773-0018
1991 Ford Taurus GL sedan, black, all power, a/c, cruise, 94K miles, \$1,450. 895-0045
2002 Lexus ES300, silver, gray leather interior, 6-CD changer, sunroof, warranty, 66K miles, \$23,500. 430-0220
2003 Honda Accord EX coupe, 4-cyl., 58K miles, extended warranty, leather, gray, all power, \$16,900. 256-721-1234
1998 Winnebago Adventure motor home, 32', one-owner, \$48,000. 931-433-5695
2005 Silverado, standard cab, 1.6K miles, \$20,500. 256-586-3077
1981 Cutlass Calais, runs well, transmission just replaced, \$1,200. 603-9160
1980 Airstream Excella II TT, 31', can send photos. 334-678-6512/Dothan
1991 Nissan Stanza, 5 speed, 155K miles, PW/PL, a/c, maroon, 4 door, \$1,490. 256-426-2516

Wanted

2004 Toyota Sienna. 539-5495
Kitchen table w/chairs for college student, medium size, approx. 48"x40." 883-2757
Canoe trailer. 464-0337
Zebco 33 classic reel, 1980s vintage, for parts. 325-4731

Free

Kittens, free to good home. 256-206-2806
Firewood, split and ready to burn. 722-2821

Found

Eye glasses; keys; leather jacket; reading glasses; ladies watch. Call 544-3623 to identify/claim
U.S. currency; child's sunglasses; HP cartridge. Call 544-3623 to identify/claim

How PARSEC works

By Sherrie Super

The foundation of PARSEC — short for the Preliminary Analysis of Revolutionary Space Exploration Concepts — is a central database. Using their personal computers, NASA engineers can tap into it for up-to-the-minute data from colleagues. Armed with better and more comprehensive information, the engineers can evaluate design concepts earlier in the vehicle design process.

The cycle is self-perpetuating, because these early evaluations also are input into the system, fueling better decision making later in the spacecraft-design process. The system also closes the gap sometimes left in traditional concept and architecture

mission studies, which often have fewer analytical details and little continuity between individual studies.

In addition to data input from engineers across NASA, PARSEC includes design tools and avenues for discussion groups among engineers and scientists — enabling seasoned design professionals to share insights and further fine-tune the software features.

The developers also see potential for the technology to benefit industry and other governmental agencies, particularly organizations that depend on engineering and manufacturing expertise. Currently, all PARSEC design tools are limited to government and affiliated contractor personnel. More information about PARSEC is available on the Web at <http://parsec.msfc.nasa.gov>.

The writer, an ASRI employee, supports the Office of Strategic Analysis and Communications.

PARSEC

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The suite of design tools is called PARSEC, short for Preliminary Analysis of Revolutionary Space Exploration Concepts. The tools enable engineers to share design ideas, access the same highly technical information and see the latest test results — all from their desktop computers.

"By evaluating more concepts within a shorter turnaround time, we can review more options early on," said Rob Adams, the Marshall Center engineer who led the software-development activity. "And by evaluating concepts in greater detail in the early stages, we can address potential problems more quickly in the design cycle, which saves time and money."

On an infinitely more complex scale, designing spacecraft is like assembling a giant jigsaw puzzle. To develop a single

new spacecraft, numerous subsystems must be conceptualized, developed, tested and integrated into the final vehicle to ensure a perfect fit.

Each engineer is responsible for a select number of subsystems ranging from electrical to life-support. But to determine whether or not a subsystem is the right one for the job, they must evaluate that system on a global level. They must ask themselves, "How does this fit with the other systems?" and "How does this fit with the spacecraft as a whole?"

That's where PARSEC comes in. It enables engineers to tap into a central database, where they can view up-to-the-minute information input by fellow engineers across the room — or across the country.

"We look for PARSEC to be a valuable resource not only for Marshall Space Flight

Center, but other NASA centers as well," said Ed Threet, the lead of the systems engineering team within the Advanced Concepts Office. "It has been instrumental in completing advanced design studies for nuclear propulsion spacecraft and most recently in Lunar Exploration Architecture definition studies supporting the Vision for Space Exploration."

"Our team intends to produce the best conceptual designs possible in the shortest amount of time," Adams said. "In doing so, we have already reached revolutionary improvements in time and accuracy. We expect to realize even higher improvements in the future as we collaborate with our colleagues around the country."

The writer, an ASRI employee, supports the Office of Strategic Analysis and Communications.

MARSHALL STAR

Vol. 46/No. 35

Marshall Space Flight Center, Alabama 35812
(256) 544-0030
<http://www.nasa.gov/centers/marshall>

The Marshall Star is published every Thursday by the Public and Employee Communications Office at the George C. Marshall Space Flight Center, National Aeronautics and Space Administration. Classified ads must be submitted by 4:30 p.m. Thursday, and other submissions no later than 5 p.m. Friday to the Marshall Public and Employee Communications Office (CS20), Bldg. 4200, Room 103. Submissions should be written legibly and include the originator's name. Send e-mail submissions to: intercom@msfc.nasa.gov. The Star does not publish commercial advertising of any kind.

Manager of Public and Employee
Communications — Dom Amatore
Editor — Jessica Wallace

GPO: U.S. Government Printing Office 2006-523-050-20050

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